

SEQUENCE LISTING

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 Rup, Bonita
 Veldman, Geertruida M.

<120> HUMANIZED IMMUNOGLOBULIN REACTIVE WITH
 B7-2 AND METHODS OF TREATMENT THEREWITH

<130> GI-5315

<140> 09/249,011

<141> 1999-02-12

<160> 20

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 405

<212> DNA

<213> Murine anti-B7-2 heavy chain

<220>

<221> CDS

<222> (1)...(405)

<223>

<400> 1

atg ggt tgg aac tgt atc atc ttc ttt ctg gtt aca aca gct aca ggt 48
 Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
 1 5 10 15

gtg cac tcc cag gtc cag ctg cag cag tct ggg cct gag ctg gtg agg 96
 Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg
 20 25 30

cct ggg gaa tca gtg aag att tcc tgc aag ggt tcc ggc tac aca ttc 144
 Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
 35 40 45

 act gat tat gct ata cag tgg gtg aag cag agt cat gca aag agt cta 192
 Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
 50 55 60

 gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac 240
 Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
 65 70 75 80

 cag aag ttt aag ggc aag gcc aca atg act gta gac aaa tcc tcc agc 288
 Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
 85 90 95

 aca gcc tat atg gaa ctt gcc aga ttg aca tct gag gat tct gcc atc 336
 Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
 100 105 110

 tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa gga 384
 Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
 115 120 125

 acc tca gtc acc gtc tcc tca 405
 Thr Ser Val Thr Val Ser Ser
 130 135

<210> 2
 <211> 135
 <212> PRT
 <213> Murine anti-B7-2 heavy chain

<400> 2
 Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg
 20 25 30
 Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
 35 40 45
 Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
 50 55 60
 Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
 65 70 75 80
 Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
 85 90 95
 Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
 100 105 110
 Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
 115 120 125
 Thr Ser Val Thr Val Ser Ser
 130 135

INS
EI

<210> 3
 <211> 396
 <212> DNA
 <213> Murine anti-B7-2 light chain

<220>
 <221> CDS
 <222> (1)...(396)

<400> 3
 atg gat tca cag gcc cag gtt ctt ata ttg ctg ctg cta tgg gta tct 48
 Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Leu Trp Val Ser
 1 5 10 15

ggt acc tgt ggg gac att gtg ctg tca cag tct cca tcc tcc ctg gct 96
 Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
 20 25 30

gtg tca gca gga gag aag gtc act atg agc tgc aaa tcc agt cag agt 144
 Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
 35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag 192
 Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60

aaa cca ggg cag tct cct aaa ctg ctg atc tac tgg gca tcc act agg 240
 Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80

gaa tct ggg gtc cct gat cgc ttc aca ggc agt gga tct ggg aca gat 288
 Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
 85 90 95

ttc act ctc acc atc agc agt gtg cag gct gaa gac ctg gca gtt tat 336
 Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
 100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga ggg ggg acc aag 384
 Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
 115 120 125

ctg gaa ata aaa 396
 Leu Glu Ile Lys
 130

<210> 4
 <211> 132
 <212> PRT
 <213> Murine anti-B7-2 light chain

<400> 4
 Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Leu Trp Val Ser
 1 5 10 15
 Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
 20 25 30
 Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
 35 40 45
 Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60
 Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80
 Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
 85 90 95
 Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
 100 105 110
 Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
 115 120 125
 Leu Glu Ile Lys
 130

<210> 5

<211> 405

<212> DNA

<213> Humanized murine anti-human B7-2 heavy chain

<220>

<221> CDS

<222> (1)...(405)

<400> 5
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 Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
 1 5 10 15
 gtg cac tcc cag gtc cag ctg gtg cag tct ggg gct gag gtg aag aag 96
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 cct ggg agc tca gtg aag gtg tcc tgc aaa gct tcc ggc tac aca ttc 144
 Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45
 act gat tat gct ata cag tgg gtg aga cag gct cct gga cag ggc ctc 192
 Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60
 gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac 240
 Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
 65 70 75 80
 cag aag ttt aag ggc aag gcc aca atg act gta gac aag tcg acg agc 288
 Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
 85 90 95

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aca gcc tat atg gaa ctt agt tct ttg aga tct gag gat acg gcc gtt 336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa ggt 384
Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

acc ctt gtc acc gtc tcc tca 405
Thr Leu Val Thr Val Ser Ser
130 135

<210> 6
<211> 135
<212> PRT
<213> Humanized murine anti-human B7-2 heavy chain

<400> 6
Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30
Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45
Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60
Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80
Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
85 90 95
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110
Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125
Thr Leu Val Thr Val Ser Ser
130 135

<210> 7
<211> 396
<212> DNA
<213> Humanized murine anti-human B7-2 light chain

<220>
<221> CDS
<222> (1)...(396)

<400> 7
atg gat tca cag gcc cag gtt ctt ata ttg ctg ctg cta tgg gta tct 48
Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Leu Trp Val Ser
1 5 10 15

MS
E1

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ggc acc tgt ggg gac att gtg ctg aca cag tct cca gat tcc ctg gct 96
 Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
 20 25 30

gta agc tta gga gag agg gcc act att agc tgc aaa tcc agt cag agt 144
 Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
 35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag 192
 Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60

aaa cca ggg cag cct cct aaa ctg ctg atc tac tgg gca tcc act agg 240
 Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80

gaa tct ggg gtc cct gat cgc ttc agt ggc agt gga tct ggg aca gat 288
 Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
 85 90 95

ttc act ctc acc atc agc agt ctg cag gct gaa gac gtg gca gtt tat 336
 Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
 100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga cag ggg acc aag 384
 Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

gtg gaa ata aaa 396
 Val Glu Ile Lys
 130

<210> 8

<211> 132

<212> PRT

<213> Humanized murine anti-human B7-2 light chain

<400> 8

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
 1 5 10 15
 Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
 20 25 30
 Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
 35 40 45
 Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60
 Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80
 Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
 85 90 95
 Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
 100 105 110

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Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125
Val Glu Ile Lys
130

<210> 9
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR1 of humanized murine anti-human B7-2 heavy
chain

<221> CDS
<222> (1)...(15)

<400> 9
gat tat gct ata cag 15
Asp Tyr Ala Ile Gln
1 5

<210> 10
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR1 of humanized murine anti-human B7-2 heavy
chain

<400> 10
Asp Tyr Ala Ile Gln
1 5

<210> 11
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR2 of humanized murine anti-human B7-2 heavy
chain

<221> CDS
<222> (1)...(51)

<400> 11
gtt att aat att tac tat gat aat aca aac tac aac cag aag ttt aag 48
Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
1 5 10 15

ggc 51
Gly

<210> 12
 <211> 17
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> CDR2 of humanized murine anti-human B7-2 heavy
 chain

<400> 12
 Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
 1 5 10 15
 Gly

<210> 13
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> CDR3 of humanized murine anti-human B7-2 heavy
 chain

<221> CDS
 <222> (1)...(21)

<400> 13
 gcg gcc tgg tat atg gac tac
 Ala Ala Trp Tyr Met Asp Tyr
 1 5

21

<210> 14
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> CDR3 of humanized murine anti-human B7-2 heavy
 chain

<400> 14
 Ala Ala Trp Tyr Met Asp Tyr
 1 5

<210> 15
 <211> 51
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> CDR1 of humanized murine anti-human B7-2 light
 chain

<221> CDS

<222> (1)...(51)

<400> 15

aaa	tcc	agt	cag	agt	ctg	ctc	aac	agt	aga	acc	cga	gag	aac	tac	ttg	48
Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser	Arg	Thr	Arg	Glu	Asn	Tyr	Leu	
1				5					10				15			

gct	51
Ala	

<210> 16

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> CDR1 of humanized murine anti-human B7-2 light chain

<400> 16

Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser	Arg	Thr	Arg	Glu	Asn	Tyr	Leu
1				5					10				15		
Ala															

<210> 17

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR2 of humanized murine anti-human B7-2 light chain

<221> CDS

<222> (1)...(21)

<400> 17

tgg	gca	tcc	act	agg	gaa	tct	21
Trp	Ala	Ser	Thr	Arg	Glu	Ser	
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<210> 18

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> CDR2 of humanized murine anti-human B7-2 light chain

<400> 18
 Trp Ala Ser Thr Arg Glu Ser
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<210> 19
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> CDR3 of humanized murine anti-human B7-2 light
 chain

<221> CDS
 <222> (1)...(24)

<400> 19
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 Thr Gln Ser Tyr Asn Leu Tyr Thr
 1 5

24

<210> 20
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> CDR3 of humanized murine anti-human B7-2 light
 chain

<400> 20
 Thr Gln Ser Tyr Asn Leu Tyr Thr
 1 5